Improving Teachers' Self-Efficacy through Training:
An Impact for the Freedom of Students' Mathematical Thinking

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Abstract. *Teacher self-efficacy is an important component of teacher competence. At present, efforts to improve teacher competencies have not been carried out simultaneously for teacher activities in the classroom (open class) and outside the classroom (training). This quasi-experimental study aimed to examine the effectiveness of soft skills training and the practice of lesson study on improving mathematics teacher self-efficacy and describe the impact of teacher self-efficacy on the freedom of students' mathematical thinking. The study involved three mathematics teachers and 90 students from three different junior high school regions in Bandar Lampung, Indonesia (city center, semi-urban, and suburban). Data was collected through questionnaire, observation, and interview. The data were then analyzed descriptively. The effectiveness of soft skills training and the practice of lesson study on improving mathematics teachers' self-efficacy was examined using Wilcoxon Test. The results showed the differences in the average teachers' self-efficacy before and after participating in soft skills training and the practice of lesson study (with an increase of 0.82/high). The increase in teachers' self-efficacy also positively affected the freedom of students' mathematical thinking.*

Keywords: self-efficacy, soft skills training, the practice of lesson study

Introduction

Mathematics has different characteristics from other lessons. It is hierarchical, where materials at higher levels are more formal and abstract than the lower levels (Ernest, 1991). It is deductive, which requires logical and axiomatic reasoning, beginning with abstraction and inductive processes: the compilation of conjectures, mathematical models, analogies, and or generalizations based on observations of data (Sumarmo, 2006). Given the mathematical nature of hierarchy, abstraction, and inductivity, in teaching mathematics, teachers require competencies related to pedagogic, professionalism, personality, and social (UU RI No. 14, 2005). One crucial element of competencies in personality that best supports classroom learning is self-efficacy (Noer, 2012).

Self-efficacy is related to the confidence to take the desired action or success in life (Bandura, 1994). Self-efficacy is related to the individual's capacity to produce important effects (Harter, 2018). Teachers need self-efficacy for teaching (Zee & Koomen, 2016); good self-efficacy can improve teacher's quality in teaching in the classroom (Fernandez, Ramos, Silva, Nina, & Pontes, 2016), enhance teacher's teaching effectiveness (Morris, Usher, & Chen, 2017), positively contribute to improving student achievement (Achurra & Villardon, 2013),

positively influence student learning (Lev, Tatar, & Koslowsky, 2018), and increase student achievement motivation (Benawa, 2018). Improving teaching practice (Behnke, 2006), knowledge of subject matter (Swackhamer, Koellner, Basile, & Kimbrough, 2009), pedagogy (Austin, 2015), and teacher training (Vadahi & Lesha, 2015) are the methods that will ultimately increase teacher's self-efficacy. However, it is necessary to modify the method to optimally enhance the teacher's self-efficacy. This research combined two methods simultaneously: teacher training on soft skills, and teaching practices in the form of lesson study.

Soft skills are one of the important skills supporting the teacher's success in teaching. When teaching, Murni, Sabandar, Kusumah, and Kartasamita (2013) argued that soft skills can direct the teacher in delivering materials, interacting with students, empathizing with students' weaknesses, managing the classroom environment, and maximizing students' potential. Schulz (2008) stated that soft skills are related to interpersonal skills between themselves and others, such as communication, social interaction, and empathy. Premuzic, Artecheb, Bremnera, Grevenc, and Furnhamd (2010) believed that soft skills provide the ability for someone to control the surrounding environment. Permanasari (2011) argued that soft skills can maximize one's performance. These past studies showed that teachers require soft skills related to teaching, for the learning to be more effective. Soft skills in this study were teacher's support skills in teaching to obtain optimal learning outcomes, with the following three indicators: skills to develop syllabus/lesson plans, select and apply the correct learning models/methods, and utilize the school environment as a learning medium (Jaenuri, 2017). Then, the application of soft skills training will be more meaningful if it is done with the practice of lesson study.

Lesson study is a form of training to improve teachers' professionalism. Hendaya, Kadarohman, Sumarna, & Supriatna (2006) defined a lesson study as a strategy of improving the professionalism of teachers through the study of instruction collaboratively and sustainably based on collegiality principles to develop a learning community. The collaboration activities are conducted together to build a learning community between teachers. Lesson study is done in a cycle, with each cycle consisting of three stages: plan, do, and see (Isoda, 2010). Plan is the teacher planning the learning with other teachers collaboratively. Do is the teacher carrying out learning based on the plan. See is reflecting on the implementation. The practice of lesson study benefitsthe teachers in building pedagogical knowledge and practice (Cerbin & Kopp, 2006) and improving teachers' teaching ability (Arani, Keisuke, & Lassegard, 2010). Other benefits include improving teachers' belief (Sutiarso, 2015), students' mathematical thinking (Güner & Akyüz, 2017), teaching techniques (Sutiarso, Asnawati, & Jalil, 2017), and teaching skills of the multigrade teachers (Thephavongsa, 2018).

Increasing teachers' self-efficacy can improve students' abilities, including knowledge, attitudes, and skills (Achurra & Villardon, 2013). Currently, Indonesia's education system uses the 2013 Indonesian Curriculum (Permendikbud No. 54, 2013) on Graduate Competency Standards. It stated that attitudes underlie two other aspects (knowledge and skills), or in other words, attitude development is more important than knowledge and skills. Students' attitudes will encourage the emergence of knowledge and skills. As mathematics is hierarchical, abstract, and inductive, the development of students' reasoning abilities is very necessary; and this reasoning is closely related to mathematical thinking. Thus, developing aspects of mathematical thinking is vital before aspects of knowledge and mathematical skills. Hence, each soft skills and the practice of lesson study positively contribute to teacher's competencies. So far, research has focused only on increasing teachers' self-efficacy through the practice of lesson study (Chong & Kong, 2012; Nauerth, 2015; Schipper, Goei, Vries, & Veen, 2018), without teaching skills training. This study increased teachers' self-efficacy through the practice of lesson study with teaching skills training, i.e., soft skills training in teaching.

Therefore, this quasi-experimental study aimed to examine the effectiveness of soft skills training and the practice of lesson study on improving mathematics teachers' self-efficacy and describing the impact of increasing teachers' self-efficacy on the freedom of students' mathematical thinking. The freedom of mathematical thinking is the freedom to explore ideas based on their interests and thoughts in completing the tasks (Nosrati, 2015). Research on freedom of thought in mathematics is still limited, even related to teacher self-efficacy. The limitations of this study indicate that freedom of mathematical thinking is something that needs attention. The research questions proposed are (1) whether soft skills training and the practice of lesson study improve mathematics teachers' self-efficacy?, and (2) what are the impacts of increasing teachers' self-efficacy on the freedom of students' mathematical thinking?

Method

Quasi-experimental research was conducted to examine the effectiveness of soft skills training and the practice of lesson study on improving mathematics teachers' self-efficacy (before and after soft skills training and the practice of lesson study) and describe the impact of increasing teachers' self-efficacy on the freedom of students' mathematical thinking. The participants were three mathematics teachers and 90 junior high school students from three different areas in Bandar Lampung (Indonesia): school in the city center, semi-urban, and suburban. The selection of three areas was due to the consideration that schools in Bandar Lampung tend to have similar characteristics (Sutiarso, Coesamin, & Nurhanurawati, 2018).

Data was collected through questionnaire, observation, and interview. The research procedure consisted of (1) choosing three mathematics teachers in Bandar Lampung, Indonesia representing three junior high schools from different region: the city center (teacher-A), semi-urban (teacher-B), and suburban (teacher-C), (2) conducting soft skills teaching training: opening lessons, explaining the subject matter, managing classes, and closing lessons, and (3) the practice of lesson study: plan (lesson plan discussion), do (learning implementation), and see (reflection on the learning implementation). Questionnaire was adopted from Schwarzer and Jerusalem (1995) consisting of ten teachers' self-efficacy questions, with a score ranging from 1 to 4. This questionnaire was chosen because it contained teachers' self-efficacy items relevant to the condition of teachers' in general, including in Indonesia. This questionnaire has been tested by more than 1000 studies in many countries, with a reliability level between 0.76 and 0.90 (Schwarzer & Jerusalem, 2013). Based on the questionnaire data, an increase in teacher self-efficacy was interpreted using Hake (1999), as follows.

$$g = \frac{S_{post} - S_{pre}}{S_{maks} - S_{pre}}$$; with interpretation: high: $g \geq 0.7$; medium: $0.3 \leq g < 0.7$, and low: $g < 0.3$.

The self-efficacy questionnaire was administered after soft skills training and the practice of lesson study. While, the interview question had one main item only: "How are teachers' feelings or beliefs before and after soft skills training and the practice of lesson study?"

The observation to determine the freedom of students' mathematical thinking was carried out during the practice of lesson study. The observation on the freedom of students' mathematical thinking when completing tasks was video recorded. The indicators of freedom of mathematical thinking were (1) students speak spontaneously or are not anxious (Aarnos & Perkkila, 2012), (2) the occurrence of scientific dialogue between students-teachers and (3) students is free to choose the right idea (Ramdani, Dianita, & Rohaeni, 2018). In this research, observation focused on three students representing high-ability (school at the city center), medium-ability (school at semi-urban), and low-ability (school at suburban) as this study aimed to compare the impact of teachers' self-efficacy on the freedom of mathematical thinking in terms of different school areas for different levels of student ability. The data of the questionnaire, observation, and interview were analyzed descriptively. A student is said to have freedom of mathematical thinking if two of the three indicators occur during the observation. Next, Wilcoxon test (the nonparametric statistical test comparing two paired groups) using SPSS was conducted to determine the effectiveness of soft skills training and the practice of lesson study on the improvement of mathematics teachers' self-efficacy.

Results and Discussion

Wilcoxon Test was utilized to answer research question 1 related to testing the effectiveness of soft skills training and the practice of lesson study on increasing the self-efficacy of mathematics teachers. The increase in teachers' self-efficacy was interpreted by Hake's formula based on the answers to data from the questionnaire. Table 1 presents teachers' response to the questionnaire before and after the teacher participates in soft skills training and the practice of lesson study, and the increase (N-Gain) of teachers' self-efficacy.

Table 1. Teacher's self-efficacy from the city center (A), semi-urban (B), and suburban (C)

Teacher's self-efficacy statement	Teacher's self-efficacy (before)			Teacher's self-efficacy (after)			N-Gain of teacher's self-efficacy		
	A	B	C	A	B	C	A	B	C
1. I can always manage to solve difficult problems if I try hard enough.	2	2	2	4	4	4	1.00	1.00	1.00
2. If someone opposes me, I can find the means and ways to get what I want.	2	2	2	3	3	3	0.50	0.50	0.50
3. It is easy for me to stick to my aims and accomplish my goals.	1	2	1	4	4	4	1.00	1.00	1.00
4. I am confident that I could deal efficiently with unexpected events.	1	1	2	3	3	4	0.67	0.67	1.00
5. Thanks to my resourcefulness, I know how to handle unforeseen situations.	1	1	1	3	3	3	0.67	0.67	0.67
6. I can solve most problems if I invest the necessary effort.	1	1	1	3	3	3	0.67	0.67	0.67
7. I can remain calm when facing difficulties because I can rely on my coping abilities.	2	2	2	4	4	4	1.00	1.00	1.00
8. When I am confronted with a problem, I can usually find several solutions.	1	1	1	3	3	3	0.67	0.67	0.67
9. If I am in trouble, I can usually think of a solution.	1	1	1	4	3	4	1.00	0.67	1.00
10. I can usually handle whatever comes my way.	1	1	1	4	4	4	1.00	1.00	1.00
Average	1.30	1.40	1.40	3.50	3.40	3.60	0.82	0.78	0.85
								0.82	

Table 1 shows that the average N-Gain of teachers' self-efficacy through soft skills training and the practice of lesson study was 0.82 (high category). It also revealed that the suburban teacher (Teacher-C) had a higher increase in self-efficacy than the city center teacher (Teacher-A) and semi-urban teacher (Teacher-B). The increasing teachers' self-efficacy of the three teachers is illustrated in Figure 1 (before and after the practice of lesson study).
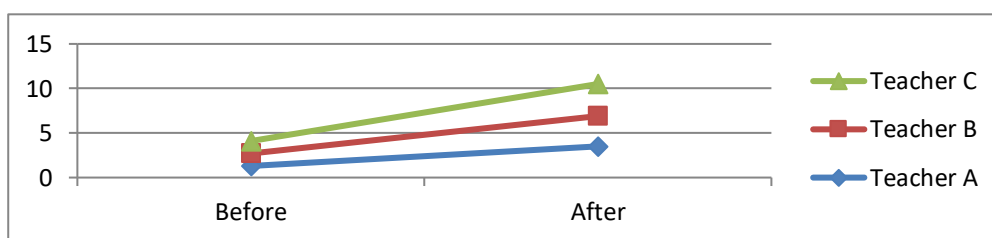

Figure 1. The increasing teachers' self-efficacy (before and after lesson)

The effectiveness of soft skills training and the practice of lesson study on increasing teachers' self-efficacy was examine by the Wilcoxon test using SPSS. The research question was whether there is a difference in the average teachers' self-efficacy before and after participating in soft skills training and the practice of lesson study. The results of the test are shown in Table 2.

Table 2. Wilcoxon test on teachers' self-efficacy

Teachers (School Areas)	Z-calculated	Sig. (2-tailed)
Teacher-A (City Center)	-2.877	0.004
Teacher-B (Semi-Urban)	-2.970	0.003
Teacher-C (Suburban)	-2.877	0.004

The Wilcoxon test results on teacher' self-efficacy indicate the average teacher's self-efficacy in the city center, semi-urban, and suburban were different before and after participating in soft skills training and the practice of lesson study , with z-calculated and sig. (2-tailed) were -2.887 and 0.004; -2.970 and 0.003; and -2.887 and 0.004, respectively. All values were significant ($p<0.05$). This results means that the average teachers' self-efficacy after participating in the soft skills training and the practice of lesson study was higher.

To answer the second research question related to the impact of increasing teachers' self-efficacy on students' mathematical thinking, observations were made on students' expressions/ comments when completing the assignments. This observation involved teachers and three students: teacher-A (city centre) and student AL (high-ability student), teacher-B (semi-urban) and student AN (medium-ability students), and teacher-C (suburban) and student AU (low-ability student). The observation results as identified in the video recording of student answer and dialogue (teacher and student) are presented and discussed as follows.

Teacher-A and Student-AL

Matrix Problem:
One day, Yasfa and Yalma went to the market. Yasfa bought 2 kg of mangoes, 2 kg of potatoes for Rp 50,000. Yalma bought 3 kg of mango and 4 kg of potatoes for Rp. 95,000. What was the price of 1 kg of mango and 1 kg of potatoes? (Explain using the matrix method).

Figure 2. The answer of high-ability student (student-AL)

Teacher-A   :   How do you solve this problem?
AL   :   I am confused, but I will try
                  I arranged it as follows.
                  2 kg of mango + 2 kg of potatoes = Rp. 50,000
                  3 kg of mango + 4 kg of potatoes = Rp. 95,000
                  Then, what else?
Teacher-A   :   You can try to change it into the matrix form. Do you remember how to
                  do it?
AL   :   Is it like this?
                  $$\begin{bmatrix} 2\ kg\ mango & 2\ kg\ potato \\ 3\ kg\ mango & 4\ kg\ potato \end{bmatrix} = \begin{bmatrix} 50,000 \\ 95,000 \end{bmatrix}$$
Teacher-A   :   Good! Try to continue to the variable!
AL   :   How can I 125ucce?
Teacher-A   :   Try changing the weight of the mango with m, then the weight of
                  potatoes with ..?
AL   :   Change it to k?
Teacher-A   :   Yes, you can do that.
AL   :   So, will it be like this?
                  $$\begin{bmatrix} 2m & 2k \\ 3m & 4k \end{bmatrix} = \begin{bmatrix} 50,000 \\ 95,000 \end{bmatrix}$$
Teacher-A   :   Good! Next, try separating the variables
AL   :   Is it like this?
                  $$\begin{bmatrix} 2 & 2 \\ 3 & 4 \end{bmatrix} \begin{bmatrix} m & k \end{bmatrix} = \begin{bmatrix} 50,000 \\ 95,000 \end{bmatrix}$$
Teacher-A   :   Yes, you almost got it right! Do you remember how to write a matrix so
                  it can be multiplied?
AL   :   Oh ... Yes, I just remembered. Is it like this?
                  $$\begin{bmatrix} 2 & 2 \\ 3 & 4 \end{bmatrix} \begin{bmatrix} m \\ k \end{bmatrix} = \begin{bmatrix} 50,000 \\ 95,000 \end{bmatrix}$$
Teacher-A   :   Good answer!

Student AL was a student who was afraid when asked to solve a problem. Teacher-A tried to guide the student who was unable to solve a problem. The student answered without fear of expressing their opinions to the teacher showed that the student had freedom of mathematical thinking. This finding is in line with Aarnos and Perkkila (2012) argued that students have the freedom to think in mathematics if the teacher allow them the freedom to express their mathematical ideas. Students are free to submit their opinions in solving problems, even though they are trial and error. The student-teacher dialogue showed that the city center teacher with high self-efficacy (0.82) had been 125uccessful in building students' enthusiasm for solving the problem. With teacher' guidance, the student tried to solve the problem without hesitation or fear.

Teacher-B and Student-AN

Probability Problem:
Maulana has a bag containing three blue marbles and six red marbles. He takes 1 marble randomly, what is the probability of taking the blue marbles?
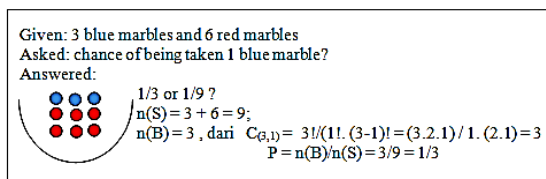
Figure 3. The answer of moderate-ability student (student-AN)

Teacher-B	:	*How can you solve the problem?*
AN	:	*I can't!*
Teacher-B	:	*Don't be afraid, try to solve it. Put three blue marbles into the bag, then takes the marble. If you take one marble, what is the probability of taking the blue one?*
AN	:	$\frac{1}{3}$
Teacher-B	:	*Now, add six red marbles. So what are the chances of taking one blue marble?*
AN	:	$\frac{1}{9}$
Teacher-B	:	*Your answer is correct if all of the marbles are blue. However, there is not one type of marble in the bag, but three. Try to remember the combination of 1 of 3 marbles, what is it?*
AN	:	*Combination 1 of 3 = 3!/(3-1)!.1! = 3*
Teacher-B	:	*Then?*
AN	:	$\frac{3}{9}$
Teacher-B	:	*Are you sure?*
AN	:	*Yes, I am!*
Teacher-B	:	*Good answer!*

The above conversation shows that initially AN felt unable to solve the problem as the problem has two colors of marbles. If the problem is about one color of marble, usually the students can solve it. The teacher did not despair to guide students in solving the problem. With full self-confidence and patience, the teacher could direct students to find the solution. The student-teacher dialogue shows that the semi-urban teacher with high self-efficacy (0.78) were also successful in developing students' enthusiasm for solving the problem. With the guidance of the images provided by the teacher, students could associate the two colors of the marbles with one color of the marbles so that students could solve the problem without hesitation. So, this student also demonstrated the freedom of mathematical thinking.

Teacher-C and Student-AU

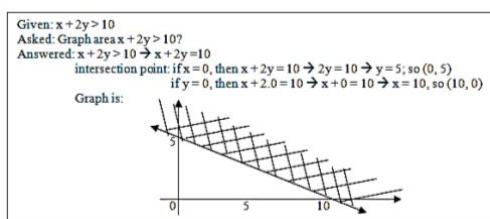Inequalities Problem: *Solve the inequality: x + 2y> 10?*

Figure 4. The answer of low-ability student (student-AU)

Teacher-C   :   *How do you solve it?*
AU   :   *Well, how to solve it?*
Teacher-C   :   *Try to make a graph, first.*
AU   :   *How do you make the graph?*
Teacher-C   :   *Do you still remember looking for the intersection of equations with the*
                    x and y axis?
AU   :   *O ... yes, I just remembered. I should find the intersection of equations*
                    x+2y =10 with the x and y axis. If x = 0, then 0 + 2y = 10. 2y = 10, then
                    $y = \frac{10}{2} = 5$. So, the intersection (0, 5). Next, if y = 0, then x + 2 (0) = 10. x
                    + 0 = 10, then x = 10. Therefore, the intersection point (10, 0).
Teacher-C   :   *Good! Now make the graph with the two intersection points*
AU   :   *Okay. I can do it*

The above conversation reveals that initially the student was unable to solve the problem. The student did not know the steps to make a graph. The teacher guided the students step by step, hence the student could finally solve it. Rohmah and Sutiarso (2018) stated that the teacher's guidances were crucial for students in solving problems. There was no sign of fear and anxiety, in the case of the student tried to solve the problem. The student's expression showed that the freedom of thought had already emerged. This student's freedom of thought arised when the teacher provided guidance when the student encountered difficulties. This teacher's ability to guide was developed in the training and learning practice. If the freedom of thought of this student continuously grows, it can develop students' creative thinking skills (Nashori & Mucharam, 2002).

The self-efficacy of teachers plays an important role when teaching. The success of a teacher is not solely determined by the teacher's ability to master and convey the subject matter, but also by the teacher's belief in his/her ability that s/he can teach mathematics effectively (pedagogic and subject matter). The results of this study indicate that this soft skills training and the practice of lesson study has increased teacher's self-efficacy. Soft skills training provided to teachers included opening lessons, explaining the subject matter, managing classes, and closing lessons.

The interview results indicated that soft skills training in open and close lessons, and classroom management skills, helped teachers achieve self-efficacy indicators, such as solving problems, achieving goals, and handling unexpected events. On the other hand, soft skills training explaining the subject matter helped the teacher in finding solutions to the problems and being calm when facing any problems. The teacher interview results revealed that the practice of lesson study had improved teachers' self-efficacy.

The practice of lesson study was mathematics learning implementing soft skills training with lesson study. This soft skills training consisted of how to open lessons, explain lessons, manage classes, and close lessons. When opening the lesson, the teacher was trained to motivate

students to engage in learning (collaboration). When explaining the subject matter, the teacher also learned how to design sharing and jumping tasks. In term of classroom management, teachers were trained to guide student discussions in doing the assignments. As for closing the lesson, the teachers learned how to guide students in concluding the subject matter based on the discussion results. The following are teacher's response to the question: "How are teachers' feeling or beliefs before and after soft skills training and the practice of lesson study?"

Teacher A:
Before   :   *I was alarmed when others, especially lecturers, observed me teaching, I felt like I was assessed*
After   :   *I feel relieved now. During the reflection, I feel helped by the observers. I am also ready for the practice of lesson study at any time.*

Teacher B:
Before   :   *I pay little attention to interactions between students, and students and the media. I only pay attention to interactions between teachers and students.*
After   :   *In the future learning activities, I will improve the interaction between students. I am ready to do lesson study at any time because it can help me improve my classroom management skills.*

Teacher C:
Before   :   *When teaching, I do not know students' activities in detail, and my classroom is less conducive*
After   :   *I feel more confident in teaching, particularly when people observe.*

Based on the interviews with the three teachers, it was seen that the practice of lesson study had increased teachers' enthusiasm and motivation to have high self-efficacy. The teachers' high self-efficacy was demonstrated by the readiness to conduct the practice of lesson study at any time, even though they were observed by other teachers and even the school principal. Two factors influencing teachers' self-efficacy after the practice of lesson study: (1) teachers' awareness about the practice of lesson study is not to assess teachers but help teachers in teaching, and (2) teachers' awareness as they do not hold full authority of student success but other teachers/principals have the same authority. It can be due to the reason that the teachers who did the practice of lesson study become a source of innovation for other teachers (observers) and vice versa. Wardani (2015) stated that the teacher observers is motivated to do better learning by imitating each other's learning model, and vice versa.

Teachers' self-efficacy is one of the factors determining teacher success in teaching. The role of the teachers' self-efficacy in this study is to build a strong belief in teacher that s/he is capable, in terms of (a) beliefs: the ability to solve difficult problems, finding ways or solutions as desired, dealing with unexpected events efficiently, (b) habits: staying focus on the goal, being calm when facing difficulties, thinking of solutions and handling any obstacles . During this soft skills training, the teacher obtained knowledge about beliefs in classroom management, how to find alternative solutions to problems and how to handle unexpected events. While the

practice of lesson study developed the habit to stay focus to the goal, be calm when facing difficulties, thinking of solutions and handling any obstacles.

The increasing teachers' self-efficacy can also be identified directly through teachers' interest in learning, engagement, and high curiosity. Teachers were interested in continuing to study in taking the soft skills training seriously. Teacher engagement was in the form of teacher response and interaction during training. The high teachers' curiosity was identified by many questions teacher asked researchers when attending training. This teachers' curiosity need to be cultivated continuously so it becomes a habit and attitude. If the teacher's curiosity has become his/her attitude, then the teacher's self-efficacy will grow by itself. This shows that this soft skills training raises an attitude of interest to keep learning, active engagement, and curiosity. If the attitudes of interest in learning, active engagement, and curiosity has developed in teachers, they will impact the students' curiosity in learning. These results are in line with research by Al-Shabibi, Al-Mantheri, and Al-Rashdi (2019) reported that statistically significant differences between students' attitudes and students taught by trained teachers.

The practice of lesson study is a teaching practice between peer groups allowing teachers to learn from each other (colleagues). Generally, the main weakness of the teacher is the lack of teacher confidence when their teaching is observed or evaluated by others, especially by authorized officials. Often, these teachers experience a decrease in self-confidence, indicated by the body shivering, cold, needing the restroom, or behaving unpleasantly. In this study, it was proven that the practice of lesson study can increase teachers' confidence in teaching so that it can improve teachers' self-efficacy. Related to this lesson study, Thephavongsa (2018) said that periodic lesson study training (every year) is an effective way to continuously improve the knowledge, skills, and professionalism of teachers. Teachers who take part in the lesson study have the opportunity to participate to receive suggestions for imprving themselves and provide suggestions to other teachers. The opportunity to give or receive suggestions will not happen to teachers who do not attend the lesson study. On the other hand, teachers who do not take part in the lesson study has no opportunity to find out about their teaching difficulties and weaknesses. This result is in line with Mudau (2013) stated that overcoming difficulties during classroom interactions is a success in teaching, and Tümkaya and Miller (2020) stated that teaching training also determines teachers' self-efficacy.

This study revealed some important findings related to soft skills training and teachers' self-efficacy, namely the growth of teachers' awareness of pedagogical knowledge. So far, teachers have assumed that pedagogical knowledge is not required in teaching because teachers convey the subject matter to students until students understand it even though it takes a long time. This assumption make teachers tired, bored, and not creative in teaching. This soft skills

training opened teachers' insight and make them realize that teaching requires pedagogical knowledge.

Another important finding related to the practice of lesson study and teacher self-efficacy was the growing awareness of teachers to be evaluated by their peers. So far, teachers have assumed that teaching is an authority, and other teachers do not need to know or be involved when they teach. The teacher feels that everyone has their way of teaching so that there is no need for other people to evaluate how they teach. Through this practice of lesson study, teachers began to realize that teaching is not an authority, but sharing each other experiences. When teachers teach and are observed by others, both teachers and observers are inspired to improve their teaching methods. This growing teacher awareness is crucial because awareness is needed to improve the quality of teachers. This finding agrees with Wibowo (2015) reporting that teachers' self-awareness is the main key to improving teacher quality and professionalism. So, this growing awareness of teachers is an indirect impact of soft skills training and the practice of lesson study.

Conclusion

Teachers' self-efficacy is an important component of teacher competencies. Teachers with good self-efficacy can improve the quality of their teaching and ultimately enhance student learning achievement. The efforts to improve competencies related to personality have not been carried out simultaneously before, during, and after the learning. The increasing teachers' self-efficacy has increased the positive attitudes of other teachers, such as an attitude of learning interest, engagement, and curiosity. With these attitudes, teachers can understand students' learning needs, acknowledge their shortcomings, and appreciate their opinions. The attitude of the teacher who is more caring, patient, and democratic is what makes the student learning environment to be more conducive to foster freedom of opinion that leads to the freedom of thought.

Based on results and discussion, it can be concluded that (1) there was a difference in the the average of teachers' self-efficacy before and after participating in soft skills training and the practice of lesson study, with an increase of 0.82 (high), and (2) increasing teachers' self-efficacy positively impact the freedom of students' of mathematical thinking. This research implies the growth of teacher awareness concerning the importance of pedagogical knowledge in teaching and the desire to be evaluated by other teachers. However, this study had two limitations, such as the small number of teachers involved (only three people) and the observers on the practice of lesson study were not fully involved, especially at the planning stage. Therefore, for future research, it is necessary to add teachers who are involved in the practice of

lesson study and observers to be fully involved since the planning stage so that the impact of the practice of lesson study on teacher self-efficacy can been clearly evaluated. It is also suggested in the next research to combine the school area and students' abilities.

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